

# Re–Establishment of Geodetic Networks at General Commission for Survey Riyadh

Othman Al-kherayef, Abdulwasiu Salawu, Abdullah Al-Qahtani and Uthman Al-Rubaia (Saudi Arabia)

**Key words:** GNSS/GPS; Positioning; Reference frames; Geodetic Network; Precise Levelling; CORS; Relative Gravity

## SUMMARY

This is a summary on the present state of geodetic activities carried out at the General Commission for Survey, Riyadh. GCS has the responsibility of defining, maintaining and providing access to the National Spatial Reference System in the Kingdom of Saudi Arabia. The Geodetic Leveling Network constitute an essential part of a country, as it provides the necessary vertical control for all surveying and mapping purposes. The first Geodetic Levelling Network of Saudi Arabia was established by the Kingdoms Ministry of Petroleum between 1966 and 1971 as a first order levelling line. The rapid development and reconstruction along roads where the old network was established has caused major part of the network to be destroyed. GCS aims to re-establish accurate height control throughout the Kingdom by an extensive levelling campaign with second order accuracy with the same density of the original network. The Tide gauge network was established at 12 locations along the red sea and the Arabia gulf. Tidal benchmarks were levelled at first order accuracy to the tide gauge. This paper will focus on the preliminary results from 14,900 km of second order leveling networks with roughly 3,400 established benchmarks. Orthometric/Normal heights computed indirectly from geopotential numbers and obtained from the adjustment of Orthometric/Normal height differences resulted in almost identical results. Progress made on the 412 KSA-Continuous Operating Reference Stations for both ground type and roof type stations will be discussed, with the aim of defining the KSA Reference Frame and to provide the user community with access to NRTK. In addition, this paper will outline the status of the Absolute and Relative Gravity Network established in the Kingdom.